

The sorption of Pu (VI) onto manganite (MnOOH), hausmannite (Mn_3O_4) was studied as a function of time, solution pH and initial plutonium concentration. The amount of plutonium removed from the solution by the minerals is dependent on a combination of variables including plutonium solution species and the surface area of the mineral. X-ray absorption fine structure taken at the Pu LIII edge showed that Pu (VI) was reduced to Pu (V)/ (IV) after contact with the minerals manganite and hausmannite. Electron paramagnetic resonance was used to qualitatively determine if Mn (II) was present in solution over time as a function of pH. The presence of Mn (II) in manganite and hausmannite at a pH range of 3 to 7 may be responsible for the reduction of Pu (VI) to Pu (V)/ (IV) in solution. The reduction and complexation of Pu (VI) has direct implications on possible migration of Pu (VI) species in the environment.